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13. ABSTRACT (Maximum 200 words) In 1997 TRICARE, Region I, the National Capital Area, will begin enrolling beneficiaries into TRICARE Prime. Beneficiaries will be assigned to "Primary Care Managers" at the primary care sites, based on the zip code of their residence. This enrollment procedure may have significant impact on the numbers and type of patients needed to support Pediatric GME and current staffing. Based on FY-94 workload in the Pediatric Acute Care Clinic, less than 50 percent of NNMC's current pediatric outpatient workload resides in the TRICARE catchment area.			

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U. S. ARMY-BAYLOR UNIVERSITY
GRADUATE PROGRAM IN HEALTH CARE ADMINISTRATION

GRADUATE MANAGEMENT PROJECT

THE IMPACT OF THE PRIMARY CARE INITIATIVE
ON THE PEDIATRIC DEPARTMENT AT THE
NATIONAL NAVAL MEDICAL CENTER: A DESCRIPTIVE ANALYSIS

SUBMITTED TO
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BETHESDA, MARYLAND
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ABSTRACT

This study was conducted to analyze the impact of the proposed National Capital Area (NCA) Primary Care Network Plan on the Pediatric Department of the National Naval Medical Center (NNMC), Bethesda. The Primary Care Plan is part of the Region 1 TRICARE Prime initiative to establish primary care sites at each military treatment facility in the NCA. The plan will require NNMC, a tertiary care teaching facility to establish a first ever primary care service within a managed care environment. The key component of the TRICARE initiative is the enrollment of beneficiaries from the newly designated zip code catchment areas. The purpose of this study was to analyze how the enrollment of the specific catchment area will affect Pediatric outpatient workload, which in turn will impact on the Pediatric GME Program.

This study was a three-part study: An analysis of the NNMC pediatric workload for FY-94 which was downloaded from CHCS, a demographic analysis of the TRICARE catchment area based on DMIS data, and a pediatric staffing analysis, using various primary care staffing models.

The analysis of FY-94 outpatient workload indicated that over 50 percent of the visits were coming from zip code areas outside of NNMC's catchment area. This could have enrollment implications, depending on the final enrollment rules. The demographic study of the catchment area produced a projected enrollment rate of 4,100 pediatric beneficiaries. Based on HMO utilization rates, this population would generate 12,000 outpatient visits, approximately half the FY-94 amount. The staffing analysis would indicate that NNMC currently must rely on pediatric specialists to provide acute care services, an inefficient use of resources. NNMC Pediatrics could benefit from utilizing more pediatric nurse practitioner, which are used extensively in civilian HMOs and have proven very effective and enjoy a high level of patient satisfaction.

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CHAPTER 1

INTRODUCTION

Conditions Which Prompted the Study

This study was prompted by the requirement for the National Naval Medical Center (NNMC), Bethesda to implement a Primary Care Service as a part of the DoD TRICARE program, as prescribed by the National Capital Area (NCA) Integrated Primary Care Business Plan.

In August 1994, under the direction of TRICARE's Region I office, triservice working groups began planning for a NCA Primary Care Network (PCN), and in April 1995 published the final business plan. The plan requires each of the ten NCA military treatment facilities (MTFs) to become "primary care sites" (PCS) and establish primary care clinics, called "Family Health Centers" (FHCs). Each FHC will provide some combination of family practice, pediatric, internal medicine (outpatient only), OB/GYN (certain outpatient services only), and wellness services, based on current capabilities.

Primary care is intended to be the focus of TRICARE, especially the TRICARE "Prime" option. The linchpin of TRICARE Prime is the enrollment of beneficiaries to a designated PCS,

based on the zip code of their residence. Each enrolled beneficiary will be assigned a "Primary Care Manager (PCM)," which may be a provider or a clinic, who will provide or coordinate all of their care (NCA Primary Care Plan 1995).

Zip codes are assigned to an MTF that is generally within the TRICARE access standard of a 30 minute drive time. It is understood that many beneficiaries live outside the limits of this standard, but that should be rectified in May 97 when the Managed Care Support Contract (MCSC) implements the civilian primary care provider network. It is currently assumed that enrollees will be allowed to sign-up at the PCS of their choice. However, they will be strongly encouraged to enroll within their assigned area (NCA Primary Care Plan 1995).

The NNMCFHC will consist of internal medicine, women's health, wellness, and pediatric services. Due to facility constraints and resource limitations, the FHC is currently intended to function as a centralized administrative processing and coordinating service, while actual patient care will occur in established clinics. This is particularly true of the Pediatric Department, which is a large, comprehensive service organized into divisions that provide specialty care, acute care, adolescent health, well-baby services, and inpatient services. The underpinning to all pediatric services is the demanding requirements of the Graduate Medical Education (GME) program.

With that in mind, the key issue facing the Pediatric Department, and which is the purpose of this study, is determining how TRICARE enrollment may effect the number and case-mix of pediatric outpatient visits. For the first time, NNMC may have to draw all (or most) of its non-referral care from a more tightly defined catchment area. This could have significant implications because the current patient mix, including acute care visits, comes from communities throughout the NCA, not just within those zip code areas within the 30-40 minute drive-time catchment area. The current volume of outpatient visits to the Pediatric Acute Care Clinic (PACC) and to the specialty clinics has been appropriate to the staffing mix and has been sufficient to support GME requirements (Moriarty 1994).

Statement of the Problem

How will enrollment impact on the National Naval Medical Center Pediatric Department? Specifically, is the current pediatric provider mix appropriate in number and type to provide effective and efficient primary care services to the beneficiary population in the new catchment area, and conversely, will this potential enrolled population provide the appropriate patient mix to support GME requirements? Moreover, if the enrolled population exceeds current capabilities, or is insufficient to

support current capabilities and GME requirements, what options are available to the department, and what is the optimal pediatric staffing model to support this enrolled population?

Literature Review

The Evolution of Primary Care

The growing importance of primary care in managed care organizations, and as a central issue of the health care reform movement, is well-documented in the literature. It has become the centerpiece of civilian managed care delivery systems, especially Health Maintenance Organizations (HMOs), which have served as the models for TRICARE Prime. Primary care providers (pediatricians, family practitioners, and internists) are the "gatekeepers" of managed care - they provide first contact care and, when needed, guide members through the network of specialty services, while continuing to manage their care (Koller 1994).

Kemp emphasizes the importance of primary care within the military health care reform movement and the challenges to be faced, especially in teaching hospitals. In his opinion, the focus must shift to primary care if Navy medicine (and DoD medicine) is to survive in a future where beneficiaries will have the option to receive their care by contracted civilian providers (Kemp 1994). One only need project out two years to envision a situation in which the TRICARE MCSC has established the civilian

primary care provider network throughout the NCA to realize how this may impact on the large teaching facilities, such as NNMC and Walter Reed, who may find themselves without a sufficient patient mix to support the various GME programs, especially in a service such as Pediatrics.

The growing emphasis on primary care is due, in part, to an expanded definition of primary care that has evolved from being thought only as that first contact, patient-focused care to a much broader, community-focused care (Lee 1994).

In a mid-60s report, the Millis Commission expanded the definition of primary care to include the concept of longitudinal responsibility for the patient's health care, regardless of the presence or absence of disease, and integration of the physical, psychological, and social aspects affecting the individual. However, it was during this same time period that medicine experienced its rapid growth in technology and specialization, and primary care became the field of choice for nurse practitioners and physician assistants (Simpson and Lee 1993).

In March 1992, Health and Human Services (HHS) sponsored the first National Conference on Primary Care. One of their objectives was to form a consensus on the definition of primary care and its role in health care delivery. Many still viewed it in the traditional sense, but the consensus opinion reaffirmed the Millis concept (Simpson and Lee 1993).

The national health care reform debate brought attention to the shortcomings (or perceived shortcomings) of our health care system: the uninsured, the under-served, and the poor health indicators in relation to other countries. The public began to insist that health care organizations not only address cost, access, and quality issues, but to also increase the overall health status of the community. Right or wrong, health care delivery systems must now assume significant responsibility for improving and maintaining the health and well-being of their communities. Most health care organizations now include community health status as a quality indicator when measuring the effectiveness of their primary care system, and are placing increased emphasis on prevention and wellness activities (Simpson and Lee 1993).

Alpert has come up with a definition of primary care that organizes in logical application the expanded role of primary care providers. This four-point definition has been adopted by the Bureau of Health Professions:

1. First contact. Primary care services are first contact medical care, for example: acute care clinics.

2. Longitudinal responsibility. Primary care includes longitudinal responsibility for a patient regardless of the presence or absence of disease. The primary care physician provides care in the office or clinic, hospital, patient's home,

and may include elements of secondary and tertiary care. TRICARE satisfies this requirement with the concept of the Primary Care Manager.

3. Integration of Services. The primary care physician must integrate the physical, psychologic, and social aspects of patient care. This is the expanded role of the primary care physician that GME programs must adjust to and ensure residents are learning.

4. Family Orientation. The family is the unit of living and therefore must be viewed as the unit of health and illness. Experienced pediatricians are aware of how often an ill child turns out to be a way in which another family member obtains medical care (Alpert 1990).

In 1990, after observing how successful civilian managed care organizations were able to maintain quality, lower costs, and improve access, the Department of Defense began its transition to managed care with "Coordinated Care" (soon to become TRICARE). A well-organized and properly staffed primary care network is a key factor for these organizations. TRICARE was designed to include the industry-wide shift in focus to primary care. The TRICARE benefit package emphasizes preventive services, such as immunizations, physical exams, and health screenings. DoD recognizes that an effective primary care system will not only increase the health status of the beneficiary population, but it

will reduce costs associated with unnecessary treatments, procedures, and referrals (NCA Primary Care Plan 1995).

Kemp also discusses the importance of developing the appropriate definition of primary care. The definition drives the scope of services to be provided, which in turn will determine the provider mix, resource allocation, and organizational structure (Kemp 1994).

The NCA Primary Care Plan has formulated the following definition of primary care:

"Primary care may be defined as a form of medical care delivery that emphasizes first-contact care and assumes ongoing responsibility for the patient in both health maintenance and therapy of illness. It is personal care involving a unique interaction and communication between the patient and the physician (provider). It is comprehensive in scope and includes the overall coordination of the care of the patient's health problems, be they biological, behavioral or social. The appropriate use of consults and community resources is an important part of effective primary care" (NCA Primary Care Plan 1995).

Pediatric Medicine and Primary Care

The concern for the overall health and well-being of the nation's children is a significant factor in the evolution of the current concept of primary care. We now have a better understanding of the social, environmental, and psychological factors that have an influence on the physical, mental, and emotional problems suffered by our young people. Child abuse, substance abuse, AIDS, unwanted pregnancy, and suicide are some of the serious health issues within all communities, including

the DoD beneficiary community. Pediatricians face many problems, but they must remain advocate for children and their communities (Alpert 1990).

Pediatrics has always been concerned with disease prevention and the environmental influences of its young patients as evidenced by immunization programs, well-baby clinics, adolescent clinics, and the monitoring of the physical development of the child. The Task Force on Graduate Medical Education Reform reports that, in contrast to adult medicine, the overwhelming majority of pediatricians practice primary care medicine; less than 20 percent practice subspecialties, 60% of graduating pediatric residents still choose to enter primary care. They state that although over 80 percent of pediatricians practice primary care medicine, there will continue to be an increased demand for specialists due to the complex illnesses and problems facing children and adolescents (Pearson, et al 1994).

GME and Pediatric Primary Care

The Graduate Medical Education Directory states that:

"..the scope of pediatric residency training must involve all aspects of human growth and development from conception through fetal life, infancy, childhood, adolescence, and young adulthood, and must include both preventive and therapeutic pediatrics. It must provide experience in the management of pathologic conditions ranging from minor illness to life-threatening conditions requiring intensive care" (GME Directory).

Much of this description fits the current managed care definition of primary care and illustrates the importance of having a broad primary care base in order to draw the mix of patients, including primary care, in order to support a GME program.

Charney discusses the complexity of a primary care-focused Pediatric Residency because of the overlap between sub-speciality training and primary care. He suggests that the prevalent managed care tendency to reduce specialty referrals may expand the role of the primary care (general) pediatrician to include the management of conditions that might otherwise be referred to specialists. Cartland suggests there is a significant concern in the pediatric medicine community that the growing emphasis on primary care and the pressure to reduce costs by limiting referrals is compromising quality care (Cartland 1992). The National Pediatric Residency Review Committee (RRC) is reviewing the specialty care and primary care aspect of the pediatric residency training program. They intend to publish new residency guidelines with an enhanced focus on general pediatrics. Pediatric subspecialists will continue to play a key role in training residents to become competent with the more complex diseases (Charney 1995).

Japson discusses how teaching hospitals are attempting to adjust to marketplace demand for more primary care physicians and

fewer specialists. Teaching hospitals costs are typically 30 to 40 percent higher on an average-per-case basis than those of community hospitals (Japson 1995).

Liebelt reports that an extensive evaluation of a large pediatric residency training program indicates that residents need broad education and training in general pediatrics, and primary and tertiary care, regardless of future career choice. Programs must provide the type of experience that will prepare the resident to function as a primary care specialist capable of providing comprehensive patient care (Liebelt 1993).

Primary Care Models

Acronyms such as HMO, PPO, PHO, MSO, POS, and IPA describe managed care models, each with a unique set of options, choice, and access in relation to the primary care provider. Within the managed care organization, such as a HMO, it may be a "closed-panel" system or "open-panel" model. Kongstvedt describes the closed panel model as the "conventional staff model," which is used by most HMOs, such as Kaiser Permanente and DoD (Kongstvedt 1993). In this model the primary care providers are employed by the organization and service a defined, enrolled population. In an "open panel" the HMO contracts with a network of independent physicians or physicians groups, who are not employees of the HMO, and who, in fact, may be signed up by one or more other managed care organizations. Kaiser Permanente, for example, is a

closed panel, group-practice HMO, that is exploring the possibility of developing (for the first time) an open-panel PPO network in order to provide a point-of-service (POS) for its membership (Burris 1995). Similarly, DoD will be adding "open panels" with the TRICARE support contract in may 1997.

Within the framework of the physician relationship, models exist based on the number and type of provider. The staff model PCS is based on the number of beneficiaries per provider or number of providers per 1,000 beneficiaries - either method will provide the same staffing mix. The most common method is the provider-per-beneficiaries ratio, such as 1:1,600, meaning that the average primary care provider can effectively and efficiently manage the health care needs of 1,600 enrolled patients, based on the health level of the population, the average number of visits per year, and length of time per office visit (Coile 1994).

According to Coile, provider-patient ratios used to be a simple 1:2,000 ratio. However, experience has shown that ratios vary with organizations, depending on number of physician extenders employed, patient demographics, and governmental regulation requirements. Pennsylvania law, for example, requires a minimum ratio of 1:1,600 for primary care networks. A higher percentage of newborns, young children, and seniors results in more visits and higher acuity, and therefore lower patient-to-provider ratios. Non-physician practitioners are generally

considered to take more time with patients so their ratios are also lower. Ratios also vary with size of organization, type of plan, and type of service. Kaiser Permanente in San Diego, for example, utilizes a ratio of one physician provider per 2,635 enrollees, but augments their physicians by employing one physician extender for every three physicians. Coile feels that demographics are the ultimate predictors of the need for primary care providers, such as how fast is the community growing and what is the age composition, family size, and number of households with young children (Coile 1994).

Koller emphasizes the importance of identifying beneficiary requirements to determine the proper staffing ratio. He suggests there should be a decreased dependency on physicians and an increase in models that rely on nurse practitioners, physicians assistants, and telephone advice nurses. These models allow physicians to handle the more serious patients (Koller 1994). This is essentially the current general HMO model, particularly employed by Kaiser Permanente, which uses nurse practitioners extensively, which they call "mid-level" providers, or just "mid-levels", and the nurse telephone advice system. Kaiser Permanente of Mid-Atlantic States schedules their pediatric mid-levels with as many patients per day as the staff pediatrician (Dixon 1995). This contradicts much in the literature and a common belief that they take longer and therefore can't see as

many patients. Koller suggests that HMOs are too dependent on physicians for primary care and must expand the use of mid-level practitioners. These providers are effective, have an equal or higher patient satisfaction level, and are certainly more cost efficient (Koller 1994). Of course, it begs the question: if mid-levels can see as many primary care patients for less cost and with an equal or higher degree of patient satisfaction, then shouldn't primary care systems be staffed with more mid-levels?

For an HMO such as Kaiser, they must maintain a larger proportion of physicians due to the requirements for admission privileges at their affiliated hospitals and the associated need to conduct rounding. Only physicians have the level of training to handle complex patients, and mid-levels must have their care co-signed by a physician. That being said, an increase in the ratio of mid-levels to physicians would enhance the primary care capability of pediatric services. The Kaiser ratio of one mid-level for every three physicians seems to be an effective baseline ratio, in the absence of other data.

Clinic design and the number of exam rooms per provider is an important factor in provider productivity and appropriate. At Kaiser, each provider has at least two exam rooms, and in some cases three, which allows efficient patient flow and results in up to 40 patients per provider per day. Exam rooms per provider is crucial, because although the total patient visit may be

twenty minutes, the average time that the provider actually spends with the patient is less than ten minute. The other ten minutes is spent with preliminaries, prior to the provider encounter, and post-provider activities. With at lest two exam rooms, the provider does not waste time waiting for patients to receive their preliminary work up (Brosch 1995).

Pediatric GME and Staffing model

If the pediatric outpatient visit involves care provided by a resident or intern, patient visits are going to tale longer, but there is no data on how to factor this teaching mission into determining staffing requirements (Moriarty 1994). The number of pediatric residents must be sufficient to provide for frequent and meaningful discussion with peers. Pediatric GME programs should offer a minimum of 12 resident positions in the 3 years of training, exclusive of subspecialty of residents (GME Directory). A pediatric study provides data that would suggest, on average, a typical pediatric resident provides .10 FTE of primary care support (Hurley 1994).

Telephone Advice System

The telephone advice system (TAS) has proven to be an effective addition to primary care models in HMOs, such as Kaiser Permanente. An additional assumption of the NCA Primary Care Plan is that a TRICARE TAS will be established by the MCSC in

1997. The TAS model is widely used by HMOs, and appear to be used predominately for pediatric problems. The standard TAS model uses algorithms developed by pediatricians to help parents with minor problems, with the intent of avoiding an unnecessary office visit. It has proven just as effective in helping parents decide whether or not to bring the child in to the facility to be seen by a provider. There has been some discussion in the literature as to whether or not the TAS reduces office visits and can, therefore, reduce costs and reduce the requirement for provider staffing. There is also some concern that the TAS may compromise quality care if advice is inappropriate. Hurley indicates that there is insufficient data to suggest that the TAS program at Kaiser-Permanente helps to reduce member visits to any significant degree. However, patient surveys indicate that it enjoys significant patient satisfaction (Hurley 1995). The results of a four year study of a TAS program in Denver indicated that out of 107,938 advice calls all were managed without adverse clinical outcome. Approximately half the patients were managed properly on home advice and the other half required an office visit anyway. Satisfaction was 100 percent with subscribing pediatricians and was 98 percent with patients (Poole 1993). However, a different TAS study indicated that some pediatric telephone advice systems were inadequate and gave inappropriate advice (O'brien and Miller 1990).

TRICARE Background

TRICARE was developed due to the following factors: an uneven distribution of health care resources; duplication of effort among military medical services; lack of a standardized health benefits package; escalating health care costs; decreased DoD funding; beneficiary confusion about health care options; and changing military and national health care priorities. In addition, the downsizing and base realignment and closure (BRAC) actions (which includes MTFs) has strained MTF capabilities and limited "space available" care for non-active duty beneficiaries (TRICARE Information Sheet 1995).

In the NCA, the term "triservice" refers to the three service hospitals in the area: NNMCM, Walter Reed Army Medical Center (WRAMC), and Malcolm Grow Medical Center (MGMC); three secondary facilities: Kimbrough Army Community Hospital at Fort Meade, DeWitt Army Health Care System at Ft. Belvoir, and Patuxent River Naval Hospital, and over 20 primary care clinics including three larger freestanding clinics at Annapolis, Quantico, Bolling, AFB, and Ft. Detrick.

TRICARE is a "triple-option" health benefits plan. The plan includes: a standard CHAMPUS fee-for-service option, called TRICARE standard; a Preferred Provider Network - TRICARE Extra; and a HMO option, TRICARE Prime. While active duty personnel are mandated to enroll in Prime, beneficiaries will be eligible to

choose the option that best serves their needs. Enrollment for NCA non-active duty beneficiaries is projected to commence in May 1997 (TRICARE Information Sheet 1995).

TRICARE Prime is similar to a private sector HMO. This option is comprised of military providers and will include the civilian provider network under the MCSC. Active duty personnel will be required to enroll in Prime and will receive care at MTFs only, while enrollment in Prime will be voluntary for non-active beneficiaries. Except for medical emergencies, a primary care team of physicians (Primary Care Managers) will manage all aspects of care, and coordinate specialty referrals. Compared to the Standard and Extra plans, Prime includes an enhanced benefits package that consists of screenings, immunizations, wellness exams, and patient education. The other benefit of Prime is continuity of care. Continuity of care eliminates the gaps that can occur and could be detrimental to a patient's recovery.

Those enrolled in Prime will be a Primary Care Site (PCS) where providers will take care of and coordinate all of their health care services. An Advice Nurse will be available to provide medical advice by telephone and schedule an appointment with a beneficiary's PCM. If the PCM suggests specialty care, a Health Care Finder will assist in the scheduling of appointments with specialists at MTFs and in the PPN. However, MTFs will be the first point of specialty referral.

Purpose

The purpose of this study is to analyze the implications of TRICARE enrollment of non-active duty beneficiaries on the National Naval Medical Center Pediatric Department. This will be accomplished by a demographic analysis and comparison of the current primary care workload with the projected enrollment for the beneficiary population residing in the NNMC assigned zip codes. Analysis will be conducted to determine if the current pediatric provider mix is appropriate in number and type to provide effective and efficient primary care services to the beneficiary population in the assigned zip codes, and conversely if the potential enrolled population can provide the appropriate patient mix to support GME requirements.

CHAPTER 2

METHODS AND PROCEDURES

This study will use descriptive statistics and comparative analysis of Pediatric Department workload, cost, manhours, and demographic data to determine the impact of TRICARE enrollment. The analysis will be divided into the following four areas:

1. Assumptions. Assumptions are based on TRICARE planning guidance and direction, and the reliability and validity of data.

2. Analysis of FY-94 Pediatric Department Primary Care workload. This analysis compared pediatric outpatient data that was downloaded from the Composite Health Care System (CHCS) to SPSS statistical software. The focus is on the zip code residence of the pediatric patients who used the Pediatric Acute Care Clinic (PACC) in FY-94, which is compared with the number of visits attributed to the newly designated TRICARE zip code catchment area to identify any potential change in workload. This section will include an analysis of pediatric outpatient costs.

3. Analysis of TRICARE Catchment Area. The 1994 Defense Management Information System (DMIS) and Defense Enrollment Eligibility Reporting System (DEERS) data on the beneficiary

population in the NNMC TRICARE catchment area was analyzed to assess potential enrollment and workload. A DMIS-generated report of CHAMPUS pediatric workload was analyzed the potential for CHAMPUS recapture.

4. Staffing Analysis. Using various primary care and pediatric staffing models, and based on the potential enrollment workload, a staffing ratio analysis was conducted.

Assumptions

The following assumptions are made for the purposes of this study. Any future changes regarding these assumption could alter the basis of the analysis, discussion, and recommendations contained herein.

1. It is assumed that the DMIS, CHCS, and MEPRS data is only as accurate, complete, and up-to-date as the input. The reliability and validity can't be tested, therefore it is assumed.

2. The NNMC Pediatric Department will retain its current structure, organization, operations, and GME program. TRICARE primary care workload will be incorporated into the current clinic setting.

3. The zip codes currently assigned to NNMC, per the TRICARE Integrated Primary Care Network Plan will remain unchanged.

4. The beneficiary population in the zip codes, as

reported out by DMIS, will remain reasonably stable. There are no significant NCA BRAC issues planned in the near future.

5. The TRICARE Managed Care Support Contract will remain on schedule to be implemented by May 1997. Current planning will allow active duty beneficiaries to sign up at the NCA facility of their choice.

6. Non-active duty beneficiary enrollment into TRICARE Prime will begin in 1997.

7. The MCSC will implement a primary care Telephone Advice Nurse System.

8. TRICARE will retain its current access standards.

9. Based on historical utilization rates, approximately 72 percent of eligible non-active duty beneficiaries will enroll in TRICARE Prime.

Analysis of FY-94 Pediatric Department Primary Care Workload

The first step in this study was to try and determine what portion of pediatric outpatient workload was considered primary care, so as to capture the data and analyze it for volume, trends, and demographic patterns, and then compare that data with the projected enrollment in the TRICARE catchment area. Although there are aspects of specialty care that would be considered primary care, especially under the broadened definition, there was no simple method for extracting all visits that could contain

aspects or primary care. Neither MEPRS nor CHCS uses Current Procedural Terminology (CPT) codes, which is the outpatient coding system used to facilitate CHAMPUS reimbursement, that could help identify those outpatient visits considered primary care.

There were just over 40 thousand outpatient visits to the NNMC Pediatric Department in FY-94. Based on Alpert's four-point definition and TRICARE's definition of what primary care entails, the Pediatric Department has long since incorporated all of those aspects into its health care delivery system. Analysis conducted by Hurley suggests that just over 27.5 thousand (69 percent) of the 40 thousand outpatient visits could be considered primary care visits (Hurley 1994). Of the 27.5K visits, a little less than 12K, or 44 percent, were acute care visits.

The intent of this analysis was to identify the volume of primary care workload and where it was coming from, compared to the TRICARE zip code assignments. Visits to the PACC were considered a reliable indicator of NNMC's primary care base, and would identify those beneficiaries that have chosen to use NNMC for their pediatric health care needs, as opposed to other facilities that may be closer to home. As the major pediatric referral facility in the region, NNMC will continue to receive specialty referrals from all catchment areas.

Acute care is considered exclusive primary care, it is the

first category in Alpert's definition and acute care providers provide the gatekeeper function. Total acute care visits provide a reliable indicator of the primary care needs of a population and the PACC data was retrievable through the CHCS system.

To obtain the PACC data, a request was submitted to the NNMC Management Information Department (MID) requesting that the following fields be downloaded onto a disk:

1. Residence of patient, by zip code.
2. Patient category (branch of service of sponsor).
3. Age and gender.
4. Date of birth.
5. Day and month of visit.

The data was downloaded and then tabulated into descriptive statistics in SPSS. The following tables are provided in Chapter three:

1. The number of PACC outpatient visits for FY-94 and the zip codes and states where the patients live. This table presents a general overview of the workload.

2. Catchment area analysis. This table depicts the comparison of the FY-94 PACC demographics with the TRICARE assigned catchment areas for the ten NCA primary care sites. This will give an indication of the potential workload loss for NNMC and the potential pediatric workload gain for the other facilities.

3. Patient category. This table depicts the sponsor's service affiliation.

4. Age and gender analysis of the PACC workload.

5. Day and month of visits.

The second part of the outpatient workload analysis was a cost analysis of the average cost per visit, using the step-down method, based on MEPRS cost data provided by the Progress Reports and Statistics Department of the Resources Management Directorate. This data covers all direct and indirect pediatric outpatient costs for FY-94. The data is used to determine the average outpatient cost, not specifically PACC or primary care visits. It is assumed that there are increased costs associated with patients with more complex problems and greater acuity.

Analysis of NNMC Catchment Area

This analysis will look at the pediatric beneficiary population that, according to current DMIS data, reside within the 138 zip codes that have been designated as NNMC's TRICARE catchment area. This analysis will show where the pediatric beneficiaries live, their demographics, number of PACC visits in FY-94, and FY-94 CHAMPUS utilization. Utilizing the Kaiser-Permanente model of expected annual visits based on age group, shown below in Table 1., this demographic data will provide a reasonable expectation of what Pediatrics could expect in the way of primary care workload.

Table 1. -- Kaiser-Permanente model to
predict pediatric outpatient utilization

Age Group	Visits/Year
0 - 4	6.3
5 - 14	2.0
15 - 17	1.0
Average	2.9

Two data bases provided by DMIS were analyzed. The first data base was a zip code analysis of the NNMC TRICARE catchment area, based on 1994 DEERS data. It listed each zip code and the population broken down by age groups and service affiliation. The raw numbers were compiled and organized into tables.

The second analysis is of CHAMPUS claims paid for pediatric outpatient visits, per CPT code, to civilian providers in the NNMC zip codes. An analysis of CHAMPUS outpatient workload will give a good indication of how many beneficiaries are choosing to pay for primary care in comparison with the number choosing to use NNMC from the same area. This may provide some information on the possibility of CHAMPUS recapture, however, one of the assumptions in the TRICARE Primary Care Plan is that there is very little expectation for significant CHAMPUS savings. This workload may provide a reasonable indicator of the potential for patient satisfaction with the civilian primary care network to be established in 1997 (TRICARE Primary Care Plan 1995).

The following table describes the 10 outpatient CPT codes that were downloaded from the data base and sorted by zip code.

Table 2.-- Description of pediatric outpatient CPT codes

New Visits	
CPT Code	Description
99201	Minor, 10 minute visit
99202	Minor to moderate, 20 minute visit
99203	Moderate, may include consult, 30 minute visit
99204	Moderate complexity, consultation, 45 min
99205	Highly complex, includes consult, 60 minute
Follow-up Visits	
99211	Simple, 5 minute visit
99212	Simple, may include consult, 10 minute visit
99213	Low complexity, may include consult, 15 minute
99214	Moderate complexity, may include consult, 25 min
99215	Highly complex, includes consult, 40 minute

The data, presented in tabular form in Chapter three, will include:

1. Pediatric beneficiary population by zip code (only zips with 100 or more pediatric beneficiaries will be listed).
2. Projected enrollment, based on the projected 72 percent enrollment rate.
3. Number of primary care visits paid by CHAMPUS per zip code for FY-94, based on the 10 outpatient CPT codes.

4. Projected pediatric primary care workload, based on the Kaiser model of expected visits per age category and applied to the age category breakdown of the pediatric beneficiary population of the NNMC catchment area. The Kaiser model is an accurate predictor of outpatient utilization that states, on average, there will be 2.9 visits per child per year.

Staffing Analysis

This analysis is to determine the optimal provider staffing needed to support pediatric primary care for the projected enrollment of the catchment area population, as well as an estimated enrollment population from out of catchment area. How current staffing manages primary care workload will be assessed based on a 1994 study of Pediatric Department provider productivity and potential enrollment capabilities. This study included a survey of all pediatric providers to determine the amount of time each spent with primary care. Table 3, on the following page, depicts the results of this analysis. Based on an estimated evaluation of the amount of time each practitioner in the Pediatric Department devotes to general pediatrics, and then converting manhours to full-time equivalents (FTE's), the table indicates the FTE amount per provider:

Table 3.--Pediatric provider apportionment
for primary care

Provider	No.	FTE
General pediatrician	2	1.4
Part-time peds	10	1.0
Nephrologist	1	0.5
Endocrinologist	1	0.2
Infectious disease	1	0.4
Adolescent	1	0.7
Neonatologist	2	0.4
Gastroenterologist	2	0.6
USUHS peds	1	0.4
Dept head/chairman	1	0.1
Developmental peds	2	0.1
Nurse pract (USNR)	1	0.9
Residents	13	1.3
Total	38	8.0

Source: Dr. John K. Hurley, "Analysis of projected enrollee population for the Department of Pediatrics, NNMC under TRICARE," 24 Feb 95.

To determine what might be the optimal provider staffing to support the primary care initiative, this analysis will factor in the above FTE ratios and account for GME training requirements when applying standard provider-to-patient ratios, such as 1:2,000, or 1:1,600 against the projected enrollment population of NNMC.

CHAPTER 3

THE RESULTS

**Analysis of FY-94 Pediatric Department
Primary Care workload**

Table 4, on the following page, summarizes the FY-94 Pediatric Acute Care Clinic file, which was downloaded from CHCS. The file was comprised of 11,651 records (PACC visits), representing 462 zip codes from 32 different states, resulting in an average of 25 visits per zip code. However, only 25 visits were attributed to states other than Maryland, Virginia, and Washington, D.C., which accounted for 11,356 visits, or 97.5 percent.

The most significant statistic is the analysis of the NCA catchment area zip codes. Of the total number of visits which can be attributed to locations within the NCA, which was 10,629, only 4,475, or 38.4 percent were from the new NNMC TRICARE Prime catchment area. A total of 6,154, or 52.8 percent of the visits came from one of the other nine MTF primary care sites.

The table shows that of the 462 zip codes represented, only 59, or 12.8 percent, provided more than 50 visits, and that 304 zip codes contributed less than 10 visits.

Table 4.--Zip code analysis of PACC patient visits, FY-94

Description	Amount	Percent
Total number of patient visits	11,651	100.0%
Total number of zip codes represented	462	
Total number of states represented	32	
Average visits per zip code	25	
Total visits NNMC catchment area	4,475	38.4%
Total visits NCA catchment (non-NNMC)	6,154	52.8%
Total visits NCA catchment area	10,629	91.2%
Total Non-NCA zip codes	1,022	8.8%
Patient visits residing in Maryland	7,608	65.3%
Patient visits residing in Virginia	3,373	29.0%
Patient visits residing in Wash, D.C.	375	3.2%
Total MD, VA, DC	11,356	97.5%
Total patient visits from other states	295	2.5%
Zip codes with > 50 visits	59	12.8%
Patient visits from zips >50 visits	8,304	71.3%
Zip codes with < 10 patient visits	304	65.8%

The following table provides a breakdown of the NCA visits to indicate specific usage rates for each catchment area. The Ft. Belvoir, or Dewitt Army Community Hospital, catchment area is

the largest with 2,492 visits, followed by Kimbrough and Walter Reed. Figure 1, page 31, is a computer generated map showing where the PACC visits came from.

Table 5. -- Analysis of PACC patient visits by TRICARE catchment areas, FY-94

NCA MTF	No. Zips	Percent	No. Visits	Percent
NNMC	43	9.3	4,475	38.4
NCA MTF's (Excluding NNMC)				
Dewitt ACH	61	13.2	2,492	21.4
Kimbrough	35	7.6	1,218	10.5
WRAMC	15	3.3	1,001	8.6
Ft. Detrick	19	4.1	489	4.2
Malcom Grow	27	5.8	476	4.1
Bolling	12	2.6	290	2.5
Quantico	9	1.9	87	0.7
Annapolis	7	1.5	66	0.6
PAX River	7	1.5	35	0.3
Totals, not including NNMC	192	41.6	6,154	52.8
Totals, including NNMC	235	50.9	10,629	91.2
Non-NCA Zips	227	49.1	1,022	8.8
Grand Total	462	100.0	11,651	100.0

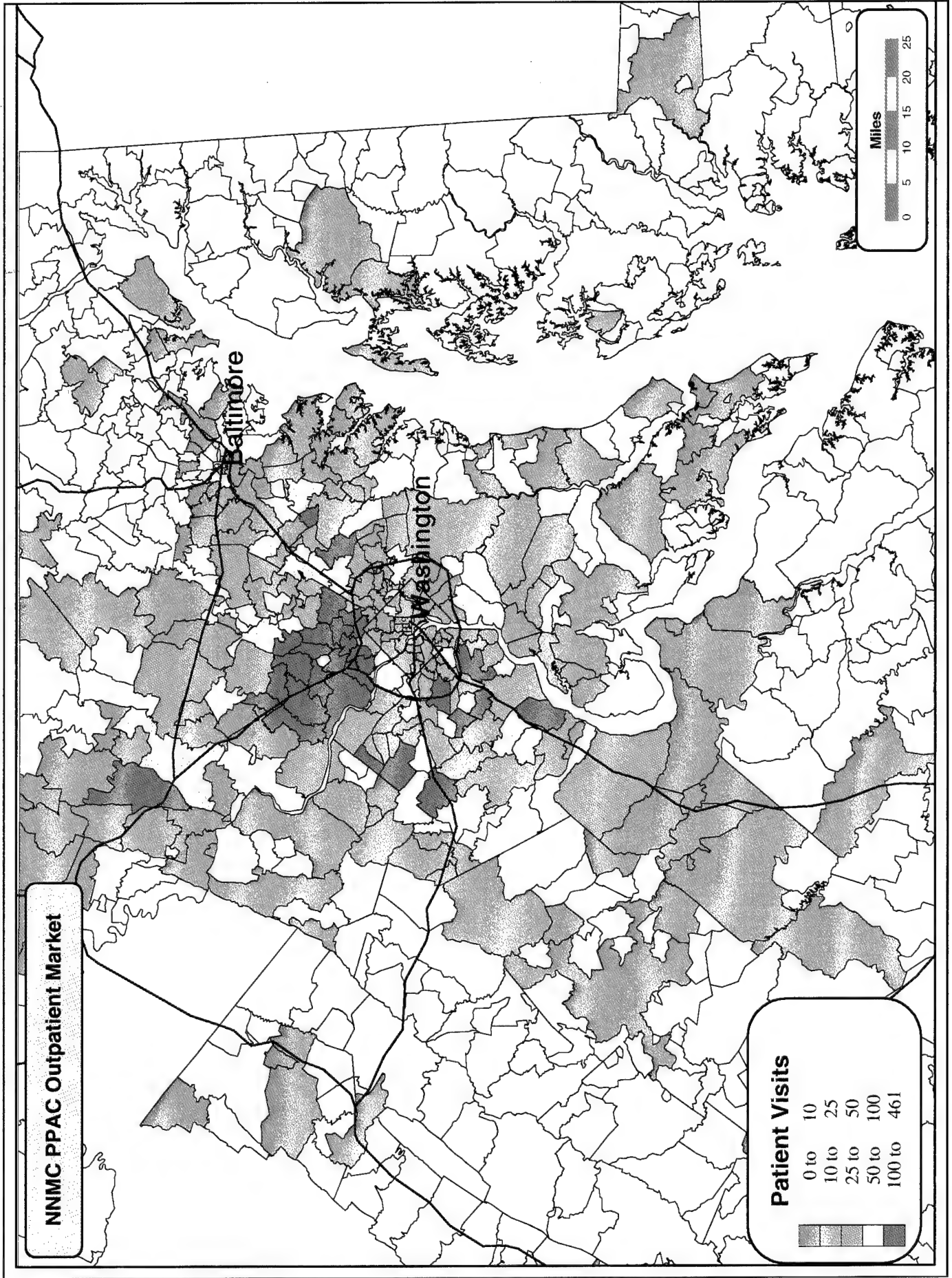


Table 3 depicts the service affiliation of the patients, which shows significant multi-service representation. As could be expected, the Navy accounts for 6,313 visits, or 54 percent, followed by the Army, 1,557/13 percent, and the Air Force, 1,362/12 percent. It is interesting that the U.S. Public Health Service accounts for more pediatric patient visits than the Marine Corps.

Table 6.-- Dependent patient category (service affiliation) PACC patient visits, FY-94

Value	Frequency	Percent
Navy	6,313	54%
Army	1,557	13%
Air Force	1,362	12%
USPHS	862	7%
USMC	782	7%
Coast Guard	418	4%
Other DoD	262	2%
NOAO	95	1%
Total	11,651	100%

Table 7, on the following page, shows the age and gender breakdown of the PACC patients. These numbers are consistent with models that project outpatient visits for pediatric populations based on age. This is validated by a comparison of the actual percentages of table. There appears to be a high correlation. Gender ratios mirror the make-up of the population.

Table 7.-- Age and gender breakdown, PACC patient visits, FY-94

Value	Frequency	Percent
0 to 4	6,441	55.3
5 to 14	4,047	34.7
15 to 17	997	8.6
Total	11,485	98.6
>18	166	1.4
Total	1,1651	100.0
Gender Breakdown		
Male	6,076	52.2
Female	5,500	47.2
Unspec	75	0.6

Table 8, page 34 portrays the PACC visits broken down by month and day of the week. There are slight variations, but the differences are not significant.

Table 8. -- Time variation of PACC
outpatient visits, FY-94

Month	Frequency	Percent
JAN	983	8.4
FEB	921	7.8
MAR	1,193	10.1
APR	1,044	8.9
MAY	1,129	9.6
JUN	878	7.5
JUL	856	7.3
AUG	838	7.1
SEP	810	6.9
OCT	1,038	8.8
NOV	1,102	9.4
DEC	970	8.2
Total	11,762	100
Day of the Week		
MON	2,603	22.2
TUE	2,511	21.3
WED	2,323	19.8
THU	2,075	17.6
FRI	2,250	19.1
Total	11,762	100

Cost Analysis

Tables 9 and 10 depict, by cost category, the indirect and direct costs, respectively, charge against pediatric outpatient services. These costs are accounted for by the MEPRS reporting system. Indirect costs are those costs incurred by other cost centers that are attributed to pediatric outpatient support using a "step-down" methodology. These cost centers provide support all services in the organization. The costs are appropriately allocated to individual costs center based on percentage of outpatient visits. Of significance is the amount of \$11 that command and administration contribute to each outpatient visit. Total indirect costs for outpatient pediatrics is \$2,394,944, which equals \$59.71 per visit, based on 40,110 total outpatient visits for FY-94.

Direct costs, Table 10, are more straightforward. These costs can be directly controlled and accounted for by the Department. Direct costs for pediatrics outpatient visits is \$70.88 per visit. The most significant cost is military salaries, almost \$2.5 million. The last section of table 10 combines both costs, which is \$5,237,658, which come out to \$130.54 per visit.

Table 9. -- Pediatric Department outpatient costs FY-94
stepped-down method, indirect costs: 40,110 visits

Cost Center	Cost Stepped-down to Peds Outpatient	Indirect Cost per Visit
Pharmacy	\$373,080	9.30
Clinical Lab/ Blood bank	329,374	8.21
Radiology	167,968	4.19
EKG, EEG, Pulmonary, Inh. Ther.	38,999	0.97
CSS, CMS	55,084	1.37
Nuclear Medicine	32,818	0.82
Depreciation	50,890	1.27
Command/Administration support	444,770	11.09
GME Support	20,287	0.51
Education and Training	37,953	0.95
Third Party Collections	10,908	0.27
Non-reimbursable misc expenses	77,587	1.93
Plant Management	24,005	0.60
Utilities	220,321	5.49
Real Property Maintenance	126,409	3.15
Other Engineer Support, Fire, Police	113,118	2.82
Communications	22,342	0.56
Material mgt/Biomed Repair	16,436	0.41
Housekeeping	117,534	2.93
Laundry	2,469	0.06
Ambulatory Care Administration	112,592	2.81
40,110 visits: Total	\$2,394,944.00	\$59.71

Table 10.-- Pediatric Department, outpatient costs,
FY-94, 40,110 visits

Direct Costs - MEPRS Code BDAA			Direct
SEEC Code	Description	Cost	Cost per Visit
11.2	Civilian salaries	\$318,000	\$7.93
21.1	TAD, Travel	10,000	.25
23.1	Communications	1,714	.04
25.3	Equipment Maintenance	8,000	.20
25.5	Fees, (Registration)	2,000	.05
25.5	Other Contract Services	21,000	.52
26.1	Supplies	32,000	.80
42.1	Reservists Salaries	50,000	1.25
45.1	Military Salaries	2,400,000	59.84
Total		\$2,842,714	70.88

Total cost, pediatric outpatient FY-94
40,110 visits

		Cost Per Visit
Direct costs	2,842,714	70.88
Indirect costs	2,394,944	59.71
Total	\$ 5,237,658	\$130.59

Catchment Area Analysis

A compilation of the pediatric beneficiary population, ages 0-17, as reported by DEERS for 1994, shows that there are approximately 5,788 pediatric beneficiaries residing within the 138 zip codes assigned to NNMCMC for TRICARE Prime. Table 11 lists all zip codes with greater than 100 beneficiaries. Most beneficiaries reside in the Rockville-Gaithersburg-Germantown corridor.

The number of beneficiaries utilizing CHAMPUS providers for their outpatient primary care needs does not appear overly significant, although there was a high of 265 CHAMPUS-paid visits in Gaithersburg.

Table 12 depicts the same population centers with the pediatric population broken down by age categories. The age categories are significant for determining potential workload, as the Kaiser model suggests that a younger population has a much higher utilization rate. Table 12 rolls-up the age breakdown numbers and applies the enrollment and utilization models to determine potential workload. Based on these models, NNMCMC could expect 11,855 visits per year from the assigned catchment area.

Table 11.-- Analysis of NNMC assigned catchment area

¹ Zip Code	City/Town	² Peds Pop	³ Proj Enrl	⁴ PACC Visits	⁵ CHAMPUS Visits
20164	Sterling, VA	285	205	86	118
20165	Sterling	105	76	41	72
20814	Bethesda, MD	171	123	141	11
20815	Chevy-Chase	111	80	30	19
20817	Bethesda, MD	269	194	200	64
20832	Olney, MD	247	178	140	16
20850	Rockville, MD	204	147	218	27
20852	Rockville	160	115	188	30
20853	Rockville	317	228	269	26
20854	Potomac, MD	256	184	193	15
20855	Rockville	194	140	207	58
20874	Germantown, MD	402	289	461	55
20876	Germantown	123	89	141	14
20877	Gaithersburg, MD	253	182	225	54
20878	Gaithersburg	494	356	460	73
20879	Gaithersburg	459	330	457	138
20895	Kensington, MD	173	125	187	12
20906	Silver Spring, MD	532	383	343	48
22101	McLean, VA	222	160	83	87
22207	Arlington, VA	216	156	27	72
	All other zip codes	595	428	378	196
	Total	5,788	4,167	4,475	1,205

Table 12. -- Analysis of pediatric beneficiaries in catchment area
by age breakdown

Zip Code	City	Peds.Pop .	Age 0-4	Rate	Age 5-14	Rate	Age 15-17	Rate
20164	Sterling	285	55	19%	166	58%	64	22%
20165	Sterling	105	30	29%	50	48%	25	24%
20814	Bethesda	171	47	27%	90	53%	34	20%
20815	Chevy-CH	111	24	22%	70	63%	17	15%
20817	Bethesda	269	65	24%	163	61%	41	15%
20832	Olney	247	52	21%	128	52%	67	27%
20850	Rockville	204	57	28%	113	55%	33	16%
20852	Rockville	160	54	34%	77	48%	29	18%
20853	Rockville	317	53	17%	194	61%	70	22%
20854	Potomac	256	47	18%	132	52%	77	30%
20855	Rockville	194	33	17%	120	62%	41	21%
20874	Germ'town	402	141	35%	203	50%	58	14%
20876	Germ'town	123	41	33%	70	57%	12	10%
20877	Gaith'brg	253	70	28%	141	56%	42	17%
20878	Gaith'brg	494	106	21%	298	60%	90	18%
20879	Gaith'brg	459	117	25%	262	57%	80	17%
20895	Kensington	173	50	29%	95	55%	28	16%
20906	Silver Spr	532	167	31%	286	54%	79	15%
22101	McLean	222	36	16%	138	62%	48	22%
22207	Arlington	216	38	18%	128	59%	50	23%
	All others	595	118	20%	324	54%	154	26%
Total		5,788	1,401	25%	3,248	56%	1139	19%

Table 13.-- NNMC Catchment area projections for enrollment and pediatric outpatient visits

Age Category	¹ Population	² Projected Enrollment	³ Predicted Visit Rate	⁴ Projected OPD Visits
0 - 4	1,401	1,009	6.3	6,357
5 - 14	3,248	2,339	2.0	4,678
15 - 17	1,139	820	1.0	820
Total	5,788	4,168		11,855

Staffing Analysis

As discussed in the literature review, primary care provider staffing is based on a provider-beneficiary ratio, such as 1:2,000 or 1:1,600, the NCA TRICARE standard. Because of GME, NNMC has used FTE equivalents, per Table 3. The key is knowing the number of enrolled beneficiaries. The NNMC catchment area analysis provided reasonably hard numbers, as of 1994 - 5,788 pediatric beneficiaries for a projected enrollment (72 percent) of 4,167. Applying the FTE equivalent model depicted in Table 3, which factors in time devoted by providers to administrative and teaching duties, a model can be proposed in Table 14.

Table 14.-- Pediatric primary care staffing model

General Pediatrician				
¹ FTE	² No. Enrol	³ Adjusted	En. Pop.	⁴ Required
0.7	1,600	1,120	4,167	3.7 (4)
Pediatric Nurse Practitioner				
0.9	1,600	1,440	4,167	2.9 (3)
Pediatric Residents				
0.1	1,600	160	4,167	26

¹FTE means, for example, the gen peds provider spends 70% of time seeing patients, 30% of time teaching, etc.

²NCA TRICARE enrollment standard

³Adjusted ratio: FTE X 1,600

⁴Number of that particular provider required to support 4,167: formula is 4,167 divided by adjusted enrollment

This staffing model shown in Table 14. can be used to determine any mix of general pediatricians, nurse practitioners, or residents that is desired, based on the known population.

The problem facing NNMC and the pediatric department is not knowing what their potential enrollment is going to be, if the assumption holds true that active duty beneficiaries will be allowed to enroll out of catchment area. The PACC analysis demonstrated that the majority of patients utilizing the clinic reside in other catchment areas. They accounted for 6,154, or 52 percent, of the acute care visits to NNMC in FY-1994. Based on the NNMC catchment area population's number of visits to the PACC, it can generally be assumed that children average

approximately one acute care visit per year. Assuming that there are approximately 6,000 beneficiaries who might want to enroll at NNMC, but staying with the TRICARE projected enrollment rate of 72 percent, an a estimated 4,300 additional beneficiaries might be expected to enroll at NNMC, for a total enrollment of 8,467. Using this number as the projected enrollment, the staffing model can be applied. Table 15 on the following page will display the numbers of general pediatricians, pediatric nurse practitioners, and residents that would be required to support an enrollment of 8,467. For planning purposes, pediatric sub-specialists are not figured in. It is assumed that it is not cost effective, nor an efficient use of staffing resources to utilize specialists for basic general pediatrics and primary care medicine.

Table 15.-- Pediatric primary care staffing model

General Pediatrician				
¹ FTE	² No. Enrol	³ Adjusted	En. Pop.	⁴ Required
0.7	1,600	1,120	8,467	7.6 (8)
Pediatric Nurse Practitioner				
0.9	1,600	1,440	8,467	5.8 (6)
Pediatric Residents				
0.1	1,600	160	8,467	53

This table reflects how many providers would be needed to support enrollment. Onboard staffing would dictate the proportions. For example, current strength is two general

pediatricians, one nurse practitioner, and 13 residents. Table 16 shows how that provider mix would support a projected enrollment of 8,467.

Table 16.-- Pediatric staffing model - current staffing mix

General Pediatrician				
¹ FTE	No. Enrol	² Adjusted	³ En. Pop.	Onboard
1.4	1,600	2,240	2,240	2
Pediatric Nurse Practitioner				
0.9	1,600	1,440	3,680	1
Pediatric Residents				
1.3	1,600	2,080	5,760	13
Shortfall: 8,467 - 5,760 = (2,707)				

¹FTE is single FTE times number onboard

²Adjusted FTE is column one times column two

³This number is cumulative

CHAPTER 4

DISCUSSION

Analysis of PACC Workload

The most significant outcome of the PACC analysis is the volume of acute care workload that is coming from non-NNMC catchment areas. This has implications not only for NNMC, but also for those primary care sites that may be getting much of this workload, when enrollment begins in 1997. It presents two problems for NNMC:

1. They could be losing a significant portion of their primary care base, which would reduce workload, and decrements the amount of acute care visits and general pediatric visits needed to support GME.

2. On the other hand, if, as is currently planned, initial enrollment protocol will allow active duty beneficiaries to enroll at the site of their choosing, NNMC may have a significant demand for enrollment, possible more than they can support, based on current primary care staffing.

The first issue probably poses a much more significant threat than the second issue. Pediatric residency training requires extensive experience in primary, acute, and general

pediatric care. The current workload of 800-1200 patient visits per month to the PACC is felt to provide an appropriate amount of training for the residents (Moriarty 1994).

A very important aspect of the non-NNMC visits is the volume that came from the Northern Virginia area that now belongs to the Dewitt catchment area. This area includes 61 zip codes, providing almost 2.5K patients visits, for 21.4 percent of the workload. This FY-94 workload data does not reflect that fact that Dewitt has developed a Northern Virginia Primary Care Network, using active duty clinics and Primus clinics to provide more effective primary care services to beneficiaries. This is a large population base that may choose to enroll at Dewitt, if they are satisfied with the primary care services provided at clinics that are much closer to where they live.

The second issue may or may not be a problem. It makes it hard for NNMC to plan at this time because of the uncertainty with the enrollment numbers. However, this could be managed by determining what the most appropriate number of enrollment is, above and beyond the assigned catchment area, and then cutting off enrollment when that point is reached.

On the positive side, having less acute care workload will allow the sub-specialists to devote full-time to expanding their services, to fully integrate and incorporate primary care services with the specialty services, while enhancing the GME

training mission (McQueston 1995).

It is also interesting to see the total number of zip codes represented -462. Although only 59 accounted for greater than 50 visits, never-the-less, there were visits from 227 zip codes out of the National Capital Area that accounted for over one thousand patient visits in FY-94. Patients listed 32 different states as their home of residence. This would indicate not only the transient nature of the Washington area, but it also attracts a lot of tourists.

Season Variation

The variances in time of year, by month and day of the week were not statistically significant, although slight increases were seen in the Spring months of March, April, and May, which is indicative of allergy problems and injuries associated with athletics. The four Summer months show a drop, which, again is indicative of the transient nature of the population and the warmer weather. These Season variations, although not overly significant, do appear consistent, and would provide valuable information for staffing decisions, schedules, and leave planning.

Patient Categories (Branch of Service)

The number of visits associated with the various branches of the uniformed services is reflective of the Washington, D.C.

area. Only 54 percent of the patients were Navy dependents, and the Army and Air Force made up 25 percent of cases. The implications here is that different services have different corporate cultures, as well as different overseas assignments and deployment characteristics, all of which Pediatric Department personnel must be aware of, because these factors can have an affect on the children. For example, Marine Corps dependents are more transient and have sponsors who are deployed frequently. Another factor to consider with the Army dependents is that when enrollment begins and they fall into Walter Reed or Dewitt catchment ares, there may be a stronger tendency to go with the Army facility.

Age and Gender

The significance of the age category analysis is how closely matched the actual visits to the PACC were, Table 7, with the projected outpatient visits, based on the demographic breakdown of the NNMC catchment area, Table 13. Among other things this would confirm the accuracy of the Kaiser model age-specific rations for annual outpatient utilization. This indicates that although the age group of 0-4 comprised only 25 percent of the population in the NCA, that age group can be counted on to provide about 55 percent of the outpatient visits.

Cost Analysis of Outpatient Visits

An entire Graduate Management Project could be devoted to the analysis of outpatient costs, especially for a department such as Pediatrics with its specialty care and GME. The indirect and direct costs, listed in Tables 9 and 10, respectively, only provide a overall view of outpatient costs, and not the variance in costs that are associated with the increased acuity of specialty care and the intensity of treatment associated with GME. Never-the-less, it does tend to point out how expensive the average outpatient visit is when there is a dominant of specialized care for the chronic and complex problems, and when expenses are incurred as a result of required teaching experiences. Of significance is the disproportionate cost of command and administrative support allocated to Pediatrics.

Compared with the average CHAMPUS-paid claim for a pediatric outpatient visit in the NCA for FY-94, which was \$21 a visit, NNMC is very expensive. It is interesting to compare the more patient care-type costs, such as pharmacy, lab, xray, and supplies. The average cost per visit for those areas is only \$22.50. The overhead to operate and maintain a tertiary care teaching facility is tremendous.

Catchment Area Analysis

The analysis of the NNMC TRICARE Prime catchment area complements the data derived from the PACC workload. The most significant result of this analysis was identifying the number of

pediatric beneficiaries in the catchment area and comparing that number with the number of visits to the PACC and the number of CHAMPUS claims paid for the same zip codes. This analysis provides a strong indicator of the projected enrollment population. Although there are 138 zip codes assigned to NNMC, only 20 have pediatric populations greater than 100. The bedroom communities of Gaithersburg and Germantown, which reach out north along route 270 towards Frederick, comprise almost 30 percent of the total NNMC catchment area. The implication here is that when enrollment begins in 1997, it is also at this time that the Managed Care Support Contract is to take effect and establish a primary care network. There are hundreds of physicians between Gaithersburg and Germantown that could potentially be a part of the civilian preferred provider network. This is supported by the number of CHAMPUS paid visits in those areas, which indicates that the civilian providers are there. What will happen to enrollment at NNMC if beneficiaries can enroll in a neighborhood clinic in Gaithersburg and Germantown? NNMC may have to rely on the population base of Bethesda, Rockville, Kensington, and Silver Spring. The total population of these cities, which are in much closer proximity to NNMC, is 2,131, or 37 percent of the catchment area. These are issues that NNMC must think about and plan for.

Staffing Analysis

The purpose of this project was to identify the implications of TRICARE enrollment. The catchment area analysis and PACC workload analysis helped provide a reasonable expectation of what the enrollment population will be from the assigned catchment area, and a projection of what an expanded enrollment might look like. Either way, the significance for knowing enrollment, and the focus of this study is to try and determine what would be the optimal primary care provider staffing. Tables 14, 15, and 16 present some staffing models based on the projected enrollment and the FTE model using the primary care productivity analysis. According to this model, each general pediatrician spends 70 percent of his or her time actually seeing patients. The other 30 percent is being spent supervising residents and performing administrative duties. The pediatric nurse practitioner is the most cost effective primary care provider, both in terms of efficiency in productivity, but also in salary costs. The 13 pediatric residents provide a total of 1.3 FTE's in support of general pediatric medicine. This equals .1 FTE per resident, or put another way, each resident spends 10 percent of his or her time in general pediatrics. Without changing the current residency program, and based on FY-94 data, it can be assumed that the 13 residents, as a group, could support 2,080 enrolled beneficiaries, or 160 each.

Even if NNMC only enrolled the four thousand projected enrollees from their catchment area, the current general pediatric provider staff of two pediatricians and one nurse practitioner would not be enough to provide basic primary care and acute care. If enrollment expands to approximately eight thousand, that is if 72 percent of those who currently use NNMC choose to enroll, they will be experiencing a shortfall of 2,700 patients, or two or three providers, depending on which provider model is used. Without an increase in primary provider staff, the Pediatric Department will have to continue to rely on residents and sub-specialists to work in acute care. This is not cost efficient nor effective. The civilian managed care organizations, such as Kaiser-Permanente, are relying more and more on nurse practitioners for pediatric primary care. They are cost effective, productive, and enjoy a high degree of patient satisfaction.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

Beneficiary enrollment, as part of the TRICARE Prime and NCA Primary Care Network Plan, will have many implications for the National Naval Medical Center Pediatric Department. The most significant aspect of enrollment will be the potential for an almost 50 percent reduction in potential outpatient workload. The specific zip codes that have been designated to be NNNMC's catchment area in which to draw their enrollment from provide only a potential enrollment of 4,167, which based on utilization rates, will provide only 11,000 outpatient visits. This does not include the 10 to 15 thousand specialty outpatient visits that NNNMC could expect from throughout the region, but still falls significantly short of the 40,110 visits experienced in FY-94.

If, as is currently assumed, enrollment will be open to those active duty beneficiaries residing outside the catchment area, NNNMC Pediatrics could be in a position to control their enrollment and bring in the types of chronic or complex cases that need the continuity and follow-up that NNNMC can provide through its specialist and supported by the residency training

program. However, an expanded enrollment could exceed the current general pediatric staffing capability and draw down specialty resources. The Pediatric Department could continue to face inefficiencies in staffing without additional primary care providers. Inefficiencies are exacerbated by the limited exam room space which currently allows only one exam room per provider. The key factor to the efficient pediatrics services in civilian HMOs, such as Kaiser, is that patient flow is maintained by ensuring each provider has at least two exam rooms.

Recommendations

Further analysis and assessment should be conducted to determine the impact of the Managed Care Support Contract in those high populations centers served by NNMC, such as Gaithersburg and Germantown. How many primary care providers are in those areas and how many would be in the network? In addition, it would be helpful to download all Pediatric outpatient visits into CHCS and map out, according to zip code, where all the outpatient visits are coming from.

The Pediatric department should have at least two additional nurse practitioners. Nurse practitioners are very effective primary care providers. At Kaiser-Permanente, nurse practitioners see the same number of patients per day as physicians and have a very high level of patient satisfaction.

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